

Study on the correlation between the neutrons by ENDA and soil humidity

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outline

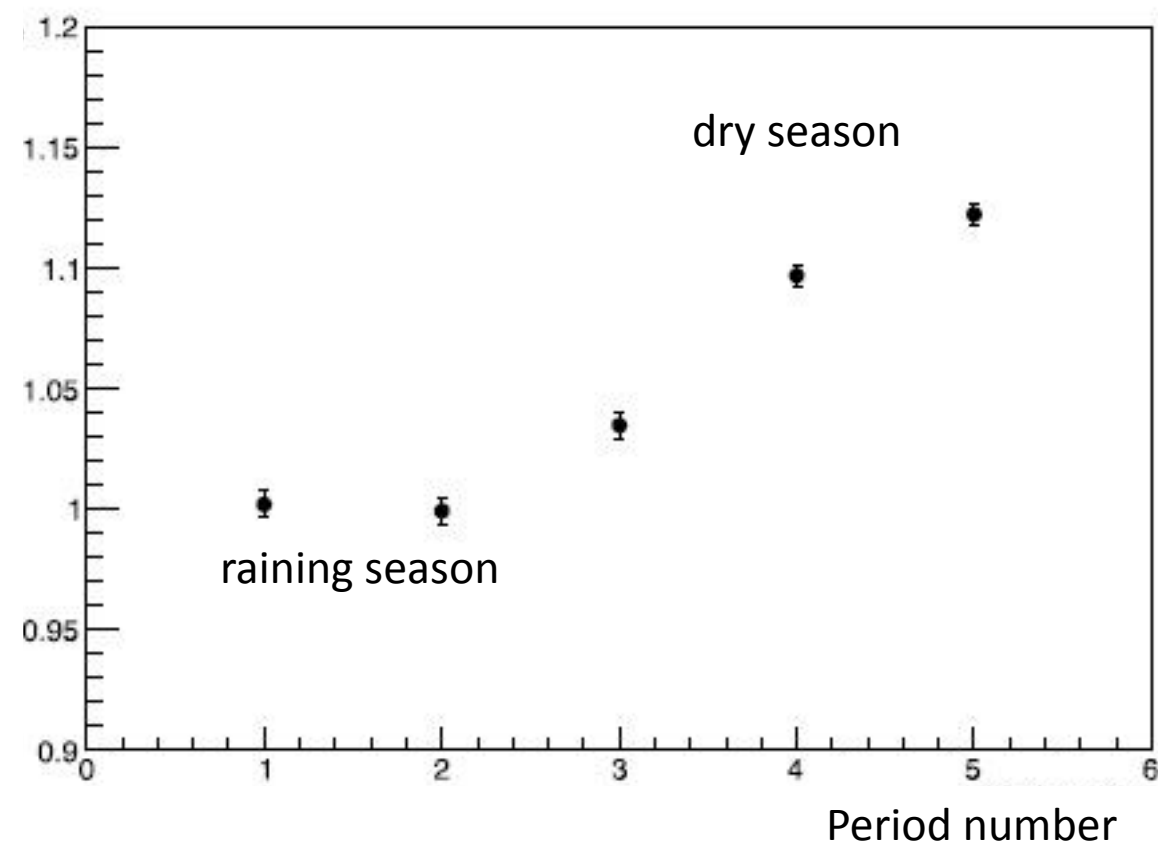


- Introduction
- Experimental Setup
- Result

Introduction

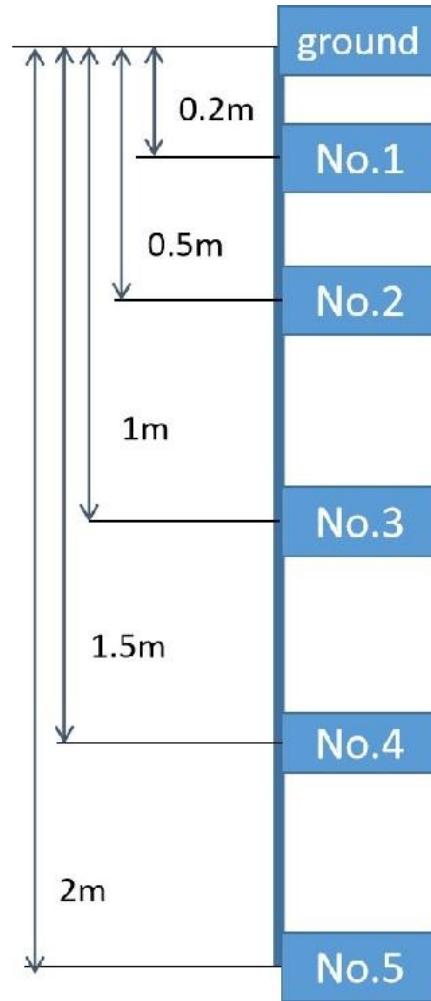
b : neutrons relative change

- During rainy season, the number of neutrons is lower than dry season.
- Maybe more water in soil during rainy season.



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Experimental Setup



So There are five soil moisture meters (WKT-SH1920) were installed inside ENDA-16-HZS to explore the effect of humidity on the performance of the EN- detector.

Result

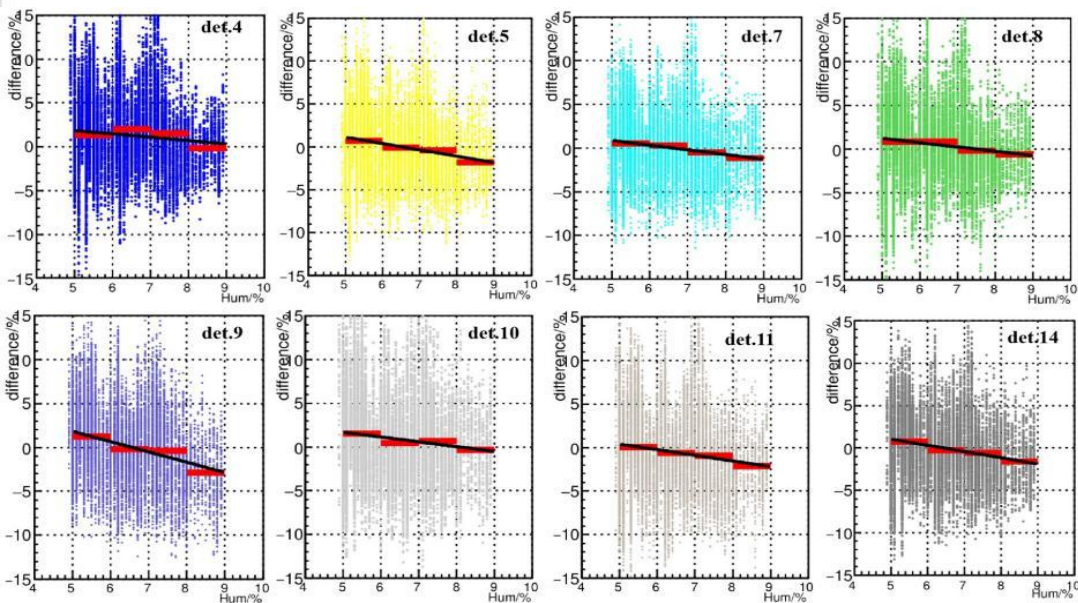
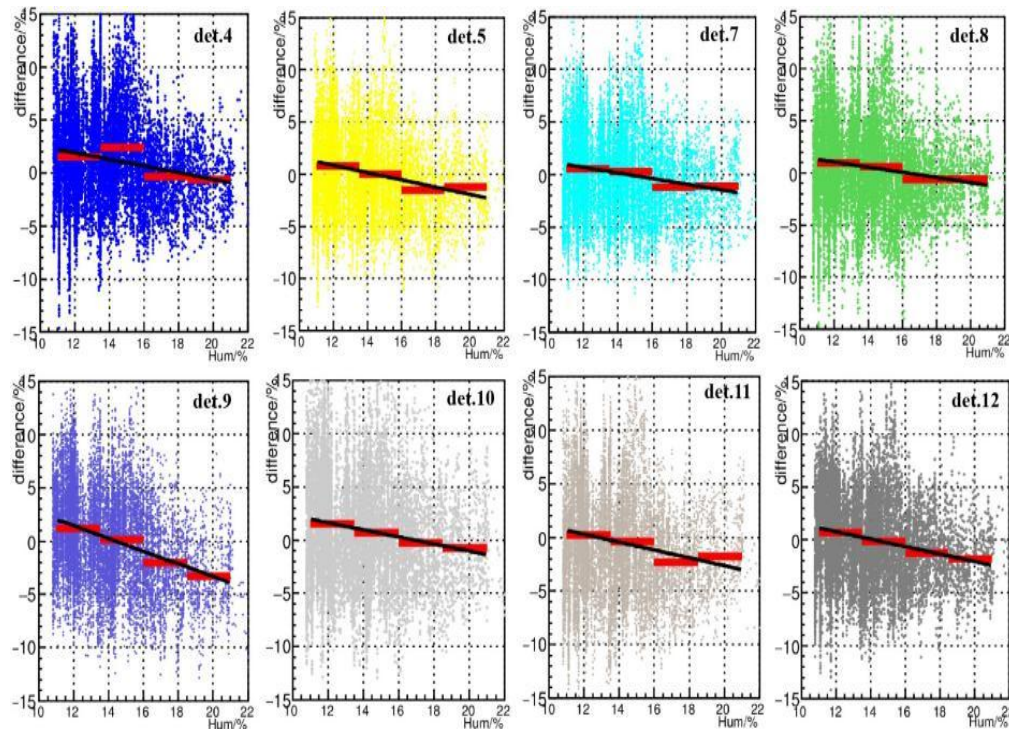
linear fitting of profile of δ vs humidity of No.1 soil moisture meter

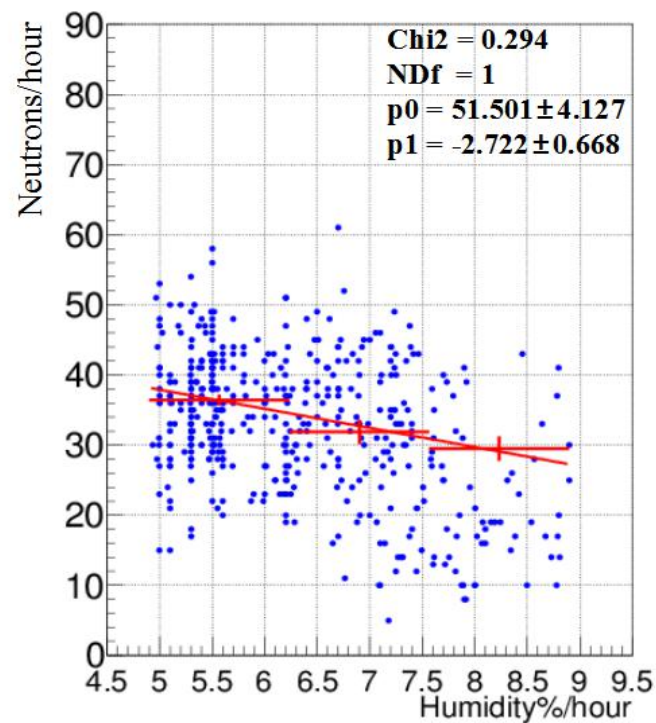
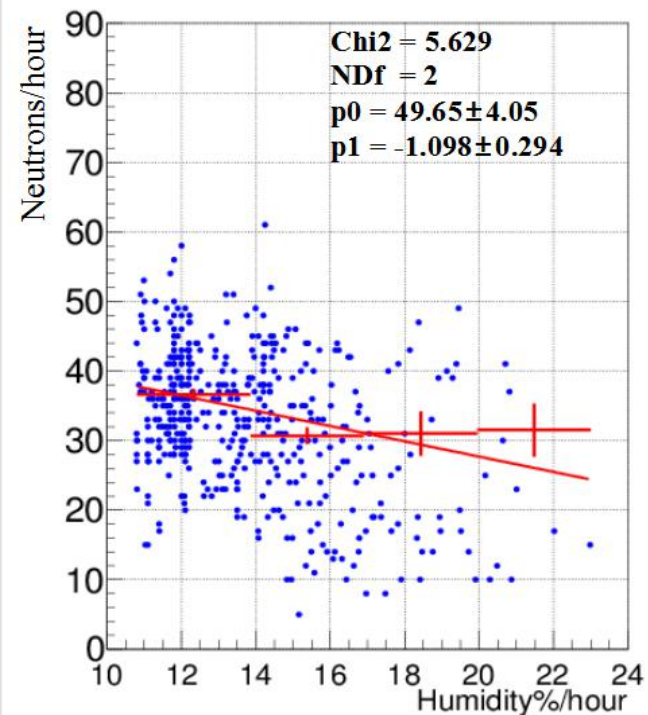
The relative difference of detector's counting rate

$$\delta = \frac{R_n - R_b}{R_n} \times 100\%$$

counting rate is negatively correlated to humidity in soil

linear fitting of profile of δ vs humidity of No.2 soil moisture meter





With the increase of humidity in soil, the neutrons in the trigger events also reduce

the linear fitting of of scattering plot of neutrons per hour vs humidity in soil

Thanks!